

AMENDMENTS TO THE CLAIMS

1. (Currently amended) A transmission having comprising a plurality of gear ratios, selector means for selectively engaging the gear ratios, clutch means for selectively transmitting drive from a drive source to the transmission, and a control system for controlling a clutch torque limit, said control system being constructed and arranged to automatically adjust the clutch torque limit value before the selector means selects an unengaged gear ratio, to allow relative rotational movement between input and output sides of the clutch if the torque exceeds the predetermined value when the unengaged gear ratio is engaged by the selector means.
2. (Currently amended) A transmission according to claim 1, including further comprising a sensor arranged to detect the operational status of the clutch means and an actuator for controlling the clutch torque limit, such that, in use, wherein the actuator is adapted to reduce reduces clutch torque limit until the sensor detects a predetermined operational status before selecting an unengaged gear ratio.
3. (Currently amended) A transmission according to claim 1 or 2, wherein the clutch means is arranged to increase the clutch torque limit when the new gear ratio has been selected.
4. (Currently amended) A transmission according to any one of the preceding claims claim 1, wherein the control system is arranged to reduce the clutch torque limit until the input and output sides of the clutch slip before the selector means selects an unengaged gear ratio.
5. (Currently amended) A transmission according to claim 4, including further comprising sensor means arranged to detect slip between the input and output sides of the clutch, and wherein the actuator for controlling the clutch torque limit reduces the clutch torque limit until the sensor means detects slip between the input and output sides of the clutch before selecting an unengaged gear ratio.
6. (Currently amended) A transmission according to claim 4 or 5, wherein the clutch means is arranged to increase the clutch torque limit when the new gear ratio has been selected.
7. (Currently amended) A transmission according to any one of the preceding claims claim 1, including further comprising means for controlling the speed and torque of the drive source.

8. (Original) A transmission according to claim 7, wherein the means for controlling the speed and torque of the drive source is an engine control unit arranged to adjust engine output when the selector assembly engages the new gear ratio.

9. (Currently amended) A transmission according to claim 7 or 8, wherein the means for controlling the speed and torque of the drive source is arranged to increase or decrease the speed and torque of the drive source to control output torque of the transmission when a new gear ratio is selected.

10. (Currently amended) A transmission according to ~~any one of the preceding claims~~ claim 1, ~~including further comprising~~ means for sensing the position of the selector means within the transmission.

11. (Currently amended) A transmission according to ~~any one of the preceding claims~~ claim 1, ~~including further comprising~~ means for sensing the relative rotational positions of a gear wheel and the selector means and means for controlling engagement of the gear wheel by the selector means according to the sensed rotational positions.

12. (Currently amended) A transmission according to any ~~one of the preceding claims~~ claim 1, wherein the clutch means is ~~one of~~ a clutch, a torque converter, or a torque converter in combination with a clutch.

13. (Currently amended) A transmission according to ~~any one of the preceding claims~~ claim 1, ~~including further comprising~~ means for measuring or estimating and recording the torque in the transmission before an unengaged gear ratio is selected and means for estimating the torque in the transmission after the new gear ratio has been selected.

14. (Currently amended) A transmission according to ~~any one of the preceding claims~~ claim 1, ~~including further comprising~~ means to predict a target torque at the completion of ~~the~~ a shift control sequence and approach ~~that~~ the target torque ~~level~~ at a predetermined gradient until the target torque is met ~~and the clutch and throttle conditions are reset to the conditions prior to the instigation of the shift~~.

15. (Currently amended) A transmission according to ~~any one of the preceding claims~~ claim 14, wherein the clutch is restored to the condition prior to instigation of the shift before the final target torque is met ~~and the throttle control alone is used to reach the target torque from that time on~~.

16. (Currently amended) A transmission according to ~~any one of the preceding claims~~ claim 1, wherein the control system ~~includes~~ further comprises means for measuring deformation caused by torque in the transmission in at least one static component or assembly that is deformed due to torque in the transmission, and means for controlling the torque in the transmission, wherein the control system is arranged to measure deformation and to adjust the torque in the transmission according to the measured deformation and a known relationship between the gear ratios.

17. (Original) A transmission according to claim 16, wherein the known relationship is substantially linear and values corresponding to the measured deformation are adjusted by a scaling factor.

18. (Currently amended) A transmission according to claim 16 ~~or 17~~, wherein the control system is arranged to control the rate of change of torque in the transmission in accordance with the deformation measured.

19. (Currently amended) A transmission according to ~~any one of claims 16 to 18~~ claim 16, wherein the means for controlling torque in the transmission includes clutch means.

20. (Currently amended) A transmission according to ~~any one of claims 16 to 19~~ claim 16, wherein the means for controlling torque in the transmission includes means for controlling the speed of a drive source.

21. (Currently amended) A transmission according to ~~any one of claims 16 to 20~~ claim 16, wherein the control system ~~includes~~ further comprises means for calculating the magnitude of torque in the transmission system.

22. (Currently amended) A transmission according to ~~any one of claims 16 to 21~~ claim 16, wherein the means for measuring deformation includes at least one load cell, ~~and preferably a plurality of load cells~~.

23. (Currently amended) A transmission according to ~~any one of claims 16 to 22~~ claim 16, wherein the means for measuring deformation includes at least one strain gauge.

24. (New) A transmission according to claim 1, further comprising means for measuring or estimating and recording the torque in the transmission before an unengaged gear ratio is selected and means for estimating the torque in the transmission after the new gear ratio has been selected.

25. (New) A transmission according to claim 1, further comprising means to predict a target torque at the completion of a shift control sequence and approach the target torque at a predetermined gradient until the target torque is met.

26. (New) A transmission according to claim 14, wherein the clutch is restored to the condition prior to instigation of the shift before the target torque is met.

27. (New) A method for changing gear ratios for transmitting drive from a drive source to a transmission comprising a clutch and a plurality of gear ratios, said method comprising

selectively engaging a first gear ratio of the transmission;

selectively transmitting drive from a drive source to the transmission at the first gear ratio,

automatically adjusting a torque limit value of the clutch before selecting a second gear ratio;

engaging a second gear ratio while allowing relative rotational movement between input and output sides of the clutch if the torque exceeds the torque limit value; and

transmitting drive from the drive source to the transmission at the second gear ratio.

28. (New) A method according to claim 27, further comprising detecting the operational status of the clutch, wherein the adjusting step comprises reducing the clutch torque limit to a predetermined operational status.

29. (New) A method according to claim 27, further comprising increasing the clutch torque limit when the second gear ratio has been selected.

30. (New) A method according to claim 27, wherein the adjusting step comprises reducing the clutch torque limit until the input and output sides of the clutch slip.

31. (New) A method according to claim 30, further comprising detecting slip between the input and output sides of the clutch, wherein the adjusting step comprises reducing the clutch torque limit until the slip between the input and output sides of the clutch is detected.

32. (New) A method according to claim 30, wherein the clutch torque limit is increased when the second gear ratio has been selected.

33. (New) A method according to claim 27, further comprising controlling the speed and torque of the drive source.